MODINE
APPLIED THERMAL INNOVATION™

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INSTALLATION AND SERVICE MANUAL

Ductless Mini-Split Ceiling Cassette
Models SSD, SSH and SCW

3087217

Refrigerant R-410A

Refrigerant R-410A is a colorless, volatile liquid with ethereal and faint sweetish odor. It is a non-flammable material. Overexposure may cause dizziness and loss of concentration. At higher levels, Central Nervous System (CNS) depression and cardiac arrhythmia may result from exposure. Vapors may displace air and can cause asphyxiation in confined spaces. At higher temperatures, (>250°C), decomposition products may include Hydrofluoric Acid (HF) and carbonyl halides. Review the R-410A Material Data Safety Sheet (MSDS) for hazards and first aid measures.

Inspection upon Arrival

1. Inspect unit upon arrival. In case of damage, report immediately to transportation company and your local factory sales representative.
2. Check rating plate on unit to verify that the power supply meets available electric power at the point of installation.
3. Inspect unit received for conformance with description of product ordered (including specifications where applicable).

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

IMPORTANT

1. The use of this manual is specifically intended for a qualified installation and service agency. A qualified installation and service agency must perform all installation and service of these appliances.
2. SSD and SSH units contain the refrigerant R-410A. Review the R-410A Material Safety Data Sheet (MSDS) for hazards and first aid measures.
3. Refrigerant charging should only be carried out by an EPA-certified air conditioning contractor.

This manual is the property of the owner.
Please be sure to leave it with the owner when you leave the job.

SPECIAL PRECAUTIONS

SPECIAL PRECAUTIONS

THE INSTALLATION AND MAINTENANCE INSTRUCTIONS IN THIS MANUAL MUST BE FOLLOWED TO PROVIDE SAFE, EFFICIENT, AND TROUBLE-FREE OPERATION. IN ADDITION, PARTICULAR CARE MUST BE EXERCISED REGARDING THE SPECIAL PRECAUTIONS LISTED BELOW. FAILURE TO PROPERLY ADDRESS THESE CRITICAL AREAS COULD RESULT IN PROPERY DAMAGE OR LOSS, PERSONAL INJURY, OR DEATH. THESE INSTRUCTIONS ARE SUBJECT TO ANY MORE RESTRICTIVE LOCAL OR NATIONAL CODES.

HAZARD INTENSITY LEVELS

1. **DANGER:** Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.
2. **WARNING:** Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.
3. **CAUTION:** Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.
4. **IMPORTANT:** Indicates a situation which, if not avoided, MAY result in a potential safety concern.

⚠ DANGER

Appliances must not be installed where they may be exposed to potentially explosive or flammable atmosphere.

⚠ WARNING

1. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
2. All appliances must be wired strictly in accordance with the wiring diagram furnished with the appliance. Any wiring different from the wiring diagram could result in a hazard to persons and property.
3. Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C.
4. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% greater than rated voltage.
5. When servicing or repairing of this equipment, use only factory-approved service replacement parts. Refer to the rating plate on the appliance for complete appliance model number, serial number and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.

⚠ CAUTION

1. SSD and SSH units contain the refrigerant R-410A. Review the R-410A Material Safety Data Sheet (MSDS) for hazards and first aid measures.
2. Refrigerant charging should only be carried out by an EPA-certified air conditioning contractor.

⚠ CAUTION

3. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% less than the rated voltage.
4. Do not attempt to reuse any mechanical or electrical controllers which have been wet. Replace defective controller.

IMPORTANT

1. Make sure the ceiling grid is supported separately from the appliance. The ceiling must not be supported by any part of the appliance, fascia or any associated wiring or pipe work.
2. Start-up and adjustment procedures should be performed by a qualified service agency.
3. To check most of the Possible Remedies in the troubleshooting guide listed in Tables 23.1 through 26.1, refer to the applicable sections of the manual.

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Table 3.1
SI (Metric) Conversion Factors

To Convert	Multiply By	To Obtain	To Convert	Multiply By	To Obtain
"W.C.	0.249	kPa	feet	0.305	m
ºF	(ºF-32) x 5/9	ºC	Gal/hr	0.00379	m^3/hr
BTU	1.06	kJ	Gal/hr	3.79	l/hr
BTU/ft^3	37.3	kJ/m^3	gallons	3.79	l
BTU/hr	0.000293	kW	Horsepower	746	W
CFH (ft^3/hr)	0.000472	m^3/min	inches	25.4	mm
CFH (ft^3/hr)	0.00000787	m^3/s	pound	0.454	kg
CFM (ft^3/min)	0.0283	m^3/min	psig	6.89	kPa
CFM (ft^3/min)	0.000472	m^3/s	psig	27.7	"W.C.

UNIT LOCATION

⚠ DANGER

Appliances must not be installed where they may be exposed to potentially explosive or flammable atmosphere.

Unpacking
Remove the banding straps and lift the cardboard lid. Remove the fascia, packed in bubble wrap, and polystyrene packing pieces to expose the unit.

When removing the unit chassis from the box, the four corner brackets should be utilized for lifting. In order to protect the fascia from dirt and damage, it should be returned to the box until it is ready to be installed.

Blank Off Pieces
When branch ducting is to be used, polystyrene pieces for blanking off fascia openings are included with the fascia packing. Up to two opposing sides may be blanked off. See Installation – Duct Collars.

Positioning
Before any installation work commences, the condensing unit location (where applicable), pipe work sizes and routes should be designed in accordance with good refrigeration practice.

The unit installation position should be selected with the following points in mind:

1. The appliance must be installed on a structure that is suitable to support the total weight of the appliance, piping, refrigerant and condensate.
2. Piping, electrical panel and condensate pump access panel should be readily accessible for maintenance purposes. A clearance of 2 feet is recommended around the electrical panel and condensate pump access panel.
3. The unit should not be positioned less than 5 ft. from a wall or similar obstruction, or in a position where the discharge air could blow directly on to the thermostat.
4. The unit should not be positioned directly above any obstructions.
5. The unit must be installed square and level.
6. The condensate drain should have sufficient downward slope (1" in 100") in any horizontal run between unit and drain. Maximum condensate pump lift is 30".
7. There should be sufficient room above the false ceiling for installing the unit. Minimum distance as shown in Figure 3.1 and Table 3.2.
8. In case of high humidity, clogged or damaged condensate piping, incorrect installation or faulty condensate pump, water may drip from the unit. Do not install the appliance where dripping water can cause damage.

Figure 3.1
Minimum Distance to Ceiling

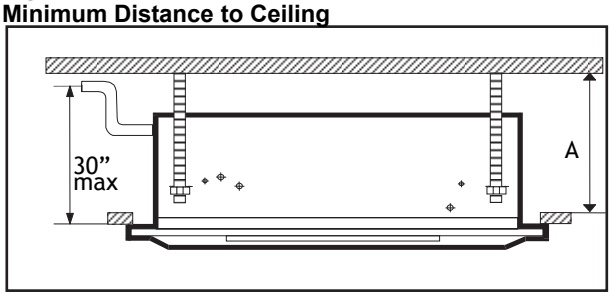


Table 3.2
Minimum Distance to Ceiling

Models	A
SCW 2/8 & 2/12	12¾"
SCW 18 & 20	11½"
SCW 33, 36 & SSD/SSH 18 - 42	13½"

Ceiling Opening Sizes
An opening in the false ceiling will then have to be cut to the size shown in Table 3.3.

Table 3.3
Ceiling Opening Sizes

Models	L x W
SCW 2/8 & 2/12	23" x 23"
SSD/SSH/SCW 18, 20 & 24	34" x 34"
SSD/SSH/SCW 30, 33, 36 & 42	46" x 34"

UNIT LOCATION/INSTALLATION

A cardboard template for ceiling cut-out and rod positions is included with the unit.

Positioning Electro-Mechanical Thermostat
In addition to positioning the unit correctly, it is very important to locate the wall mounted thermostat in the optimum position to ensure good temperature control. Therefore the installation should be selected with the following points in mind:

1. Position the thermostat approximately 48 inches above floor level.
2. Do not position thermostat where it can be directly affected by the unit's discharge air stream.
3. Avoid external walls and drafts from windows and doors.
4. Avoid positioning near shelves and curtains as these restrict air movement.
5. Avoid heat sources e.g. direct sunlight, heaters, dimmer switches and other electrical devices.

INSTALLATION

IMPORTANT

Make sure the ceiling grid is supported separately from the appliance. The ceiling must not be supported by any part of the appliance, fascia or any associated wiring or pipe work.

Hanger Bolts
The hanger bolts can now be installed (use 3/8" all thread rod) at the centers shown in Figure 4.1 and Table 4.1.

Figure 4.1
Hanger Bolt Mounting Dimensions

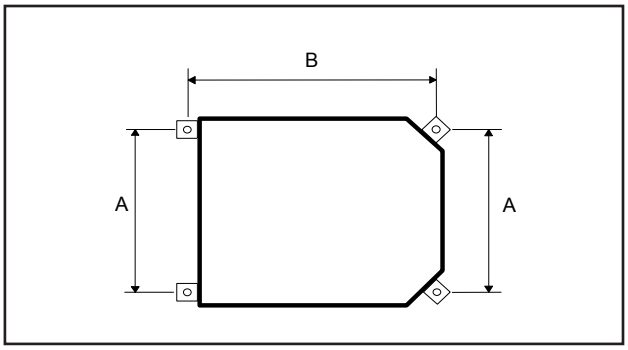


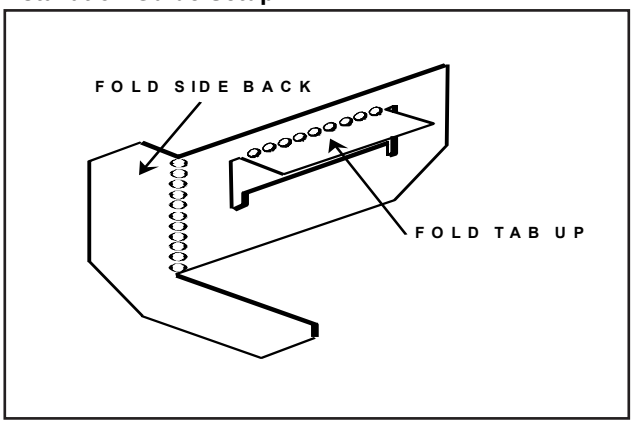
Table 4.1
Hanger Bolt Mounting Dimensions

Models	A	B
SCW 2/8 & 2/12	19½"	23"
SSD/SSH/SCW 18, 20 & 24	28½"	31½"
SSD/SSH/SCW 30, 33, 36 & 42	28½"	43½""

Check the strength of the unit mounting hanger bolts. Refer to Tables 15.1 and 18.1 for unit weights.

Installation Guide
An installation guide is included in the Modine Owner Information packet provided with the unit. Prepare the installation guide by folding the flat metal piece, by hand, along the perforations as shown in Figure 4.2.

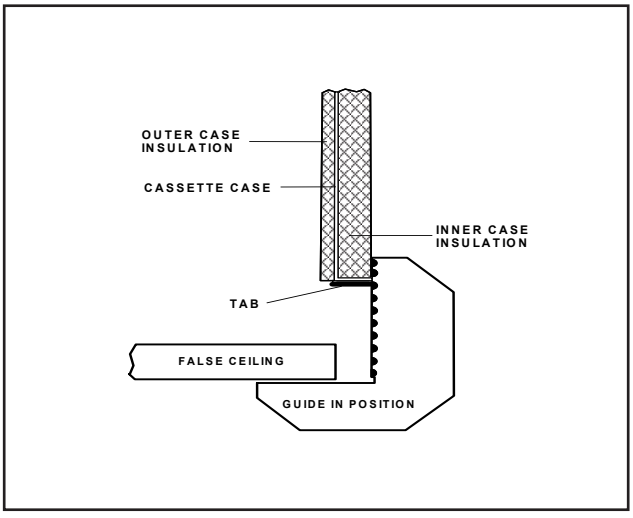
Figure 4.2
Installation Guide Setup



The unit can now be lifted onto the hanging rods and leveled at the correct distance from the ceiling with the aid of the installation guide.

1. Hold the tab on the installation guide against the bottom of the cassette case with the guide pointing away from the cassette. See Figure 4.3.
2. Adjust the height of the cassette until the guide is level with the bottom of the false ceiling.

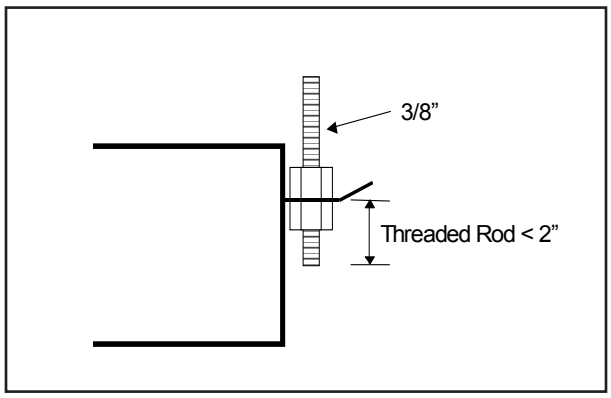
Figure 4.3
Installation Guide Position



3. Secure the unit in position with locknuts and washers on both sides of the unit bracket. Ensure the threaded rod does not protrude more than 2" below the mounting bracket as shown in Figure 5.1.

INSTALLATION

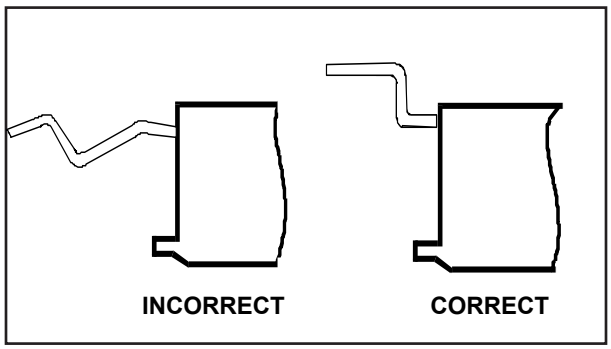
Figure 5.1
Threaded Rod Dimension



Condensate Piping
The unit is supplied with a 3/8" ID flexible hose for connection to copper or plastic drain piping.

When installing the unit the following points should be remembered:
1. Maximum pump lift is 30”.
2. The highest point in the condensate piping should be as close to the unit as possible. See Figure 5.2.

Figure 5.2
Condensate Piping



3. Condensate piping should slope downwards in the direction of water flow with a minimum gradient of 1” in 100”. There must not be any uphill gradients other than in the first 30” of piping from the unit.
4. When multiple units are connected to a common condensate drain, ensure the drain is large enough to cope with the volume of condensate from all units. It is also recommended to have an air vent in the condensate piping to prevent any air locks.
5. Condensate piping must not be installed where it may be exposed to freezing temperatures.

Duct Collars
Branch duct and fresh air duct collars can be attached to the unit chassis by following the steps below:
1. Up to 2 branch ducts can be attached per unit.
2. Refer to the relevant dimensional drawing on pages 10 to 14 to become familiarized with knock-out hole locations.
3. The insulation is pre-cut to aid location and removal of the relevant section. Rub hand across surface of insulation to reveal exact location of knock-out.
4. Remove the metal knockout from the chassis.
5. Attach the duct collar to the chassis using self tapping screws.
6. Replace washable filter with the pleated filter provided with fresh air duct collar kit.

Note: See Figures 10.1, 11.1, 12.1, 13.1 and 14.1 for Branch Duct and Fresh Air Duct locations and dimensions.

Piping Installation – SSD and SSH Units

⚠ CAUTION

1. SSD and SSH units contain the refrigerant R-410A. Review the R-410A Material Safety Data Sheet (MSDS) for hazards and first aid measures.
2. Refrigerant charging should only be carried out by an EPA-certified air conditioning contractor.

Note: R-410A refrigerant is the only approved refrigerant for this system.

The unit should be piped up in accordance with good refrigeration and/or plumbing practices.

The outdoor condensing unit must be connected to the indoor unit coil using field supplied refrigerant grade (ACR) copper tubing that is internally clean and dry. Units should be installed only with the tubing sizes for the approved system combination as specified in Tables 16.1 and 17.1.

Condensing units are factory charged with refrigerant for a matching indoor coil plus 15 feet of field supplied lines.

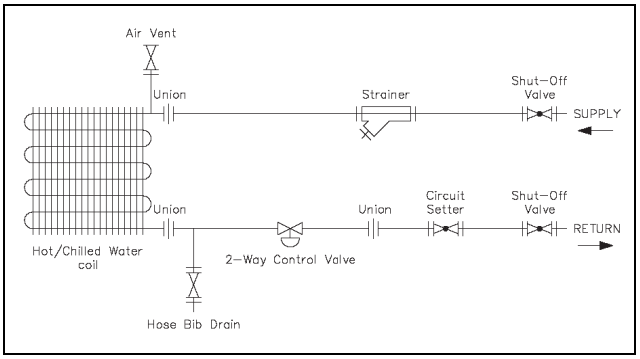
See the installation and maintenance manual provided with the condensing unit for installation, evacuation and system charge information.

Piping Installation – Hot/Chilled Water Coils

1. Branch piping to and from the unit should include swing joints to allow for expansion and contraction of the piping without placing a strain on the unit coil.
2. Install pipe unions and shut-off valves in lines to and from each coil to allow maintenance or replacement of unit without shutting down and draining entire system. See Figure 6.1.
3. Include a circuit setter in return line for water flow regulation.
4. A drain valve (hose bib) should also be provided for each coil line to allow removal of water from the coil if located in an area subject to freezing.
5. It is advisable to use a pipe line strainer before each coil.
6. Provide adequate pipe hangers, supports, or anchors to secure the piping system independently of the unit.

INSTALLATION

Figure 6.1
Hot/Chilled Water Coil Piping Installation



Piping Insulation
Refrigerant, chilled water and condensate pipes should be insulated right up to the unit chassis to prevent condensation which can damage the ceiling and objects located below the piping. Chilled water valves must also be insulated to prevent sweating.

Wiring

⚠ WARNING

1. Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.
2. All appliances must be wired strictly in accordance with the wiring diagram furnished with the appliance. Any wiring different from the wiring diagram could result in a hazard to persons and property.
3. Any original factory wiring that requires replacement must be replaced with wiring material having a temperature rating of at least 105°C.
4. Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% greater than rated voltage.

⚠ CAUTION

Ensure that the supply voltage to the appliance, as indicated on the serial plate, is not 5% less than the rated voltage.

Installation of wiring must conform with local building codes, or in the absence of local codes, with the National Electric Code ANSI/NFPA 70 – Latest Edition. Unit must be electrically grounded in conformance to this code. In Canada, wiring must comply with CSA C22.1, Electrical Code.

Electric wiring must be sized to carry the full load amp draw of the motor, starter and any controls that are used with the unit. See Table 19.1 for Electrical Data.

This equipment in its standard form is designed for an electrical supply of 208-230V, 1Ph, 60Hz. When connection to a 115V, 1Ph, 60Hz supply is necessary, a factory mounted step up transformer must be fitted to the unit.

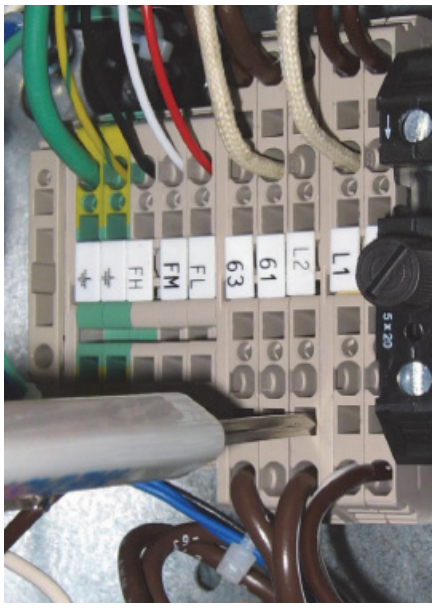
Any damage to or failure of units caused by incorrect wiring of the units is not covered by warranty.

Once the refrigeration pipe work is complete, the electrical supply can be connected by routing the cable through the appropriate casing hole and connecting the supply and ground cables to the unit's power terminals. A plastic sleeve is provided inside the control panel. Low voltage control wiring must run through the plastic sleeve on the inside of the control panel.

Terminal Strip Connections
The terminal strip connections are designed to clamp down on the wires. To properly connect the wires to the terminal strip:

1. Push a small flat head screwdriver into the square hole on the terminal. Press firmly until the screwdriver hits the back stop and opens the terminal. See Figure 6.2.
2. Remove approximately 3/8" of insulation from the end of the wire and push the stripped wire into the oval hole in the terminal.
3. Remove the screwdriver. Pull on the wire to make sure that it is securely clamped in the terminal.
4. Make sure that the terminal clamp is in contact with bare wire (insulation removed).

Figure 6.2
Terminal Strip



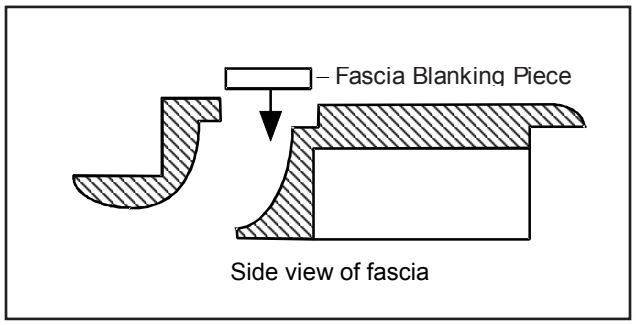
Fascia Assembly
Once the services have been connected, the four (4) fascia mounting bolts can be unscrewed approximately 1" from the condensate tray support channels.

INSTALLATION/START-UP PROCEDURE

The fascia can now be unpacked for fitting to the unit chassis. Ensure the black fir tree fasteners holding the fascia polystyrene are pushed in firmly in case of transit vibration. If a fascia aperture needs blanking off, then take one of the polystyrene blanking pieces and push it into the recess in the polystyrene fascia insulation. See Figure 7.1. Install the fascia by removing the inlet grilles and filters, locating the four fascia mounting bolts on the chassis through the four keyhole brackets on the fascia and then sliding the fascia sideways until it locks into position.

Note: Up to two non-adjacent sides can be blanked off.

Figure 7.1
Fascia Blanking Piece



Note: Make sure the foam insulating strip profile on the fascia matches the square and angled corners of the unit housing.

Before tightening the fascia to the unit, connect the two halves of the vane motor's plug and socket connection (medium and large size units).

On microprocessor controlled units, ensure that the display panel cable is routed to the electrical panel and securely fastened to its connector on the microprocessor circuit board. (Refer to the unit's electrical wiring schematic). Take care to ensure that the connector is connected in the proper orientation and that the wires are not routed such that they may become trapped, cut, broken or chafed.

The fascia can now be tightened up to the unit chassis until a good seal is obtained between fascia and chassis.

Note: Do not over tighten the bolts. To do so may cause damage to the fascia.

With filters in place, the inlet grilles can now be fitted to the fascia to complete the installation.

START-UP PROCEDURE

IMPORTANT

Start-up and adjustment procedures should be performed by a qualified service agency.

See start-up sheet example - Figure 9.1

Pre-Start Checks

Once installation is complete it is important that the following pre-start checks are made:

1. All factory and field piping is complete and tested for leaks.
2. All factory and field piping is insulated where necessary.
3. All fans are able to rotate freely.
4. The unit and interconnecting piping have been evacuated correctly and the condensing unit service valves are open (SSD and SSH units only).
5. All electrical connections (both power and control) are properly terminated.
6. All condensate drains are installed correctly.
7. The power supply is of the correct voltage and frequency.
8. The units are properly grounded in accordance with current electrical codes.
9. For microprocessor controlled units, check that the display panel cable is properly connected to the microprocessor main circuit board and that the jumper links are correctly set (refer to unit wiring schematic). If the links are set incorrectly, remove main power supply before making any changes.
10. For microprocessor controlled units, check that the battery on the main circuit board is in place and properly connected. Check also that the batteries are installed in infrared/pendant transmitter. When a pendant transmitter is used, ensure it is properly located on to the wall mounting bracket.

SSD and SSH Units – Control Circuit Checks

Note: See the installation and maintenance manual provided with the condensing unit for start-up information.

1. Ensure that the condensing unit start-up procedure has been carried out, as detailed in the condensing unit installation and maintenance manual.
2. The compressor should be isolated by removing the connection at the Y1 terminal on the indoor unit. Main power can now be applied to the indoor and outdoor units. A system electrical check can now be carried out.
3. Switch on the indoor unit via the infrared/pendant transmitter or wall mounted thermostat and check that the fan cycles correctly. - Note, in some models there is a 2 minute fan run on time to remove residual heat from the unit, if the unit is switched off during the heating mode.
4. On models with microprocessor controls, check that the High, Medium and Low fan speeds are operating correctly by changing the fan speed via the transmitter.
5. On medium and large size units, check that the motorized vane sweep functions correctly by toggling the function on or off, either via the transmitter (micro units) or via the toggle switch on the side of the electrical panel (electro-mechanical units).
6. On micro controlled units, should it be required, check that the built-in timer function is programmed and operating correctly. When the timer is activated, the red LED on the fascia display panel should be lit.

START-UP PROCEDURE

7. Check the operation of the condensate pump by pouring 7-8 ounces of water down the pump outlet, switch the unit on, select cooling mode and the lowest possible temperature set point then observe the water being pumped from the unit.
8. Where fitted, check the operation of the hot water valve or the electrical heat elements by switching the system to the heating mode and selecting the highest possible temperature set point.
9. The compressor signal Y1 (disconnected from the indoor unit in step 1) can now be re-connected and main power applied to the system.

Note: The 24V power for the indoor unit control circuit is supplied from a unit factory-installed transformer. When the indoor and outdoor units are supplied from separate main supplies, care must be taken to ensure that the outdoor unit is isolated whenever the indoor unit power is removed. Failure to do so may result in freeze ups and other damage to the unit.

Chilled Water Unit – Control Circuit Checks

A thorough pipe work check and pressure test should be performed before the unit controls are set up

1. Isolate the unit from the chilled water supply. A system electrical check can now be carried out.
2. Switch on the indoor unit via the infrared/pendant transmitter or wall mounted thermostat and check that the fan cycles correctly. - Note, in some models there is a 2 minute fan run on time to remove residual heat from the unit, if the unit is switched off during the heating mode.
3. On models with microprocessor controls, check that the High, Medium and Low fan speeds are operating correctly by changing the fan speed via the transmitter.
4. On medium and large size units, check that the motorized vane sweep functions correctly by toggling the function on or off, either via the transmitter (micro units) or via the toggle switch on the side of the electrical panel lid (electro-mechanical units).
5. On micro controlled units, should it be required, check that the built-in timer function is programmed and operating correctly. When the timer is activated, the red LED on the fascia display panel should be lit.
6. Check the operation of the condensate pump by pouring 7-8 ounces of water down the pump outlet, switch the unit on, select cooling mode and the lowest possible temperature set point then observe the water being pumped from the unit.
7. Check the operation of the chilled water valve by switching the system to the cooling mode and forcing a call for cooling.
8. Where fitted, check the operation of the hot water valve or the electrical heat elements by switching the system to the heating mode and forcing a call for heat.
9. Allow chilled water to enter the unit and vent air from the unit by opening the 1/4" air bleed. Re-tighten the bleed screw once all air has been removed.
10. Repeat steps 1-4 above for all units in the same system.

The units are now ready for the system balance to be performed.

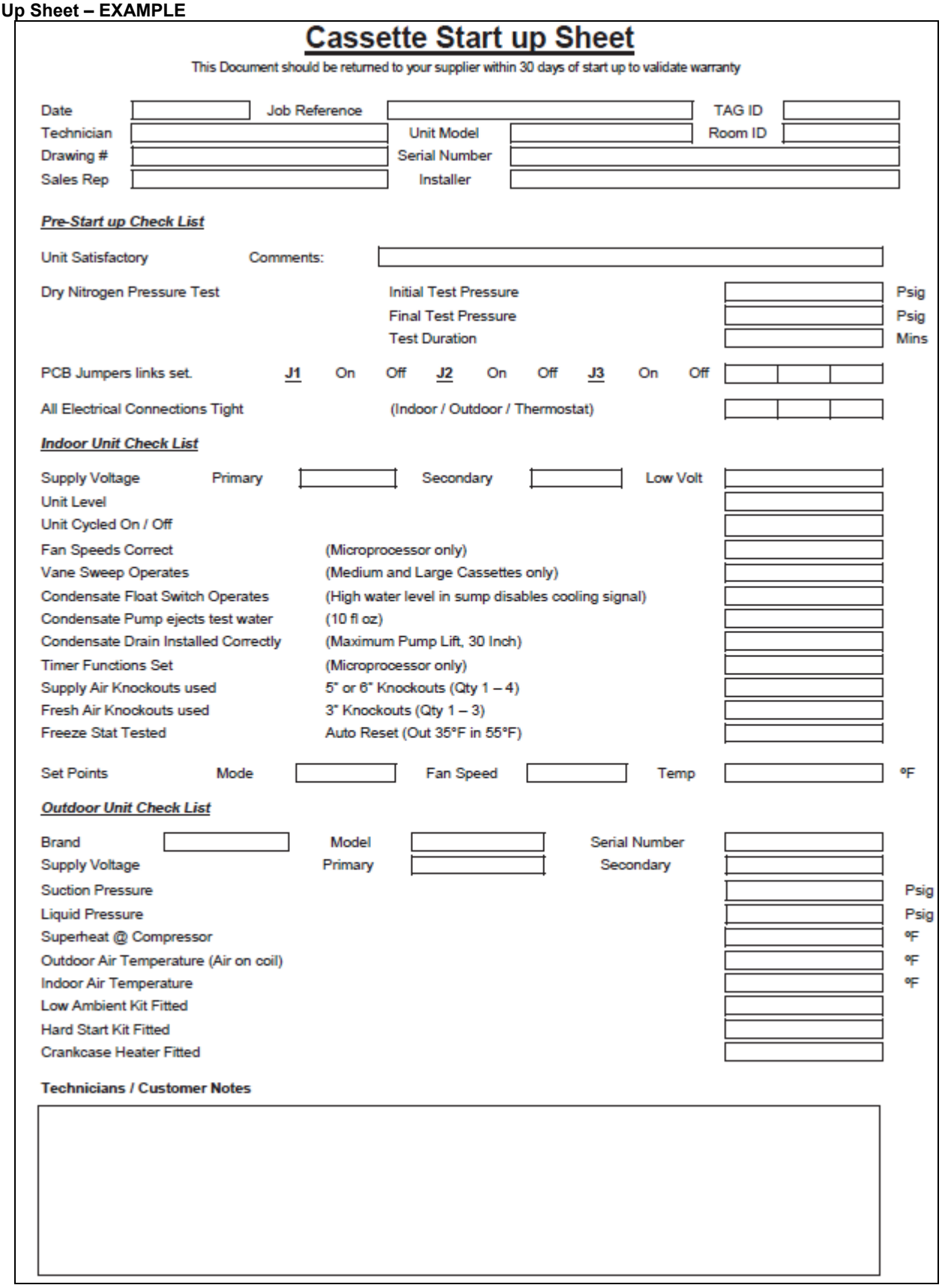
Sequence of Operation

Electro-Mechanical Controls: A 24V signal from the thermostat to terminal G supplies power the blower motor(s), condensate pump and vane motor (if equipped). A toggle switch on the control box can be used to switch the oscillating vanes on or off. The condensate pump will run continuously, as long as the blower is energized. A call for heating, at terminal W, or cooling, at terminal Y, will energize the water valve actuator and allow water to flow through the cassette coil. When the call for heating or cooling is satisfied the valve will close.
If the temperature drops below the set-point of the coil freeze stat, the water valve with automatically open to circulate water through the coil.
If the condensate float switch detects a high level of water in the condensate tray, the switch will open, activate the condensate pump and disable the heating/cooling signal until the water level drops down to normal.

Micro-Processor Controls: See the Infra-Red Remote Controller Installation and Service Manual, 8-507.

START UP SHEET - EXAMPLE

Figure 9.1
Start Up Sheet – EXAMPLE



Cassette Start up Sheet

This Document should be returned to your supplier within 30 days of start up to validate warranty

Date		Job Reference		TAG ID	
Technician		Unit Model		Room ID	
Drawing #		Serial Number			
Sales Rep		Installer			

Pre-Start up Check List

Unit Satisfactory	Comments:		
Dry Nitrogen Pressure Test	Initial Test Pressure		Psig
	Final Test Pressure		Psig
	Test Duration		Mins
PCB Jumpers links set.	J1 On Off J2 On Off J3 On Off		
All Electrical Connections Tight	(Indoor / Outdoor / Thermostat)		

Indoor Unit Check List

Supply Voltage	Primary		Secondary		Low Volt	
Unit Level						
Unit Cycled On / Off						
Fan Speeds Correct	(Microprocessor only)					
Vane Sweep Operates	(Medium and Large Cassettes only)					
Condensate Float Switch Operates	(High water level in sump disables cooling signal)					
Condensate Pump ejects test water	(10 fl oz)					
Condensate Drain Installed Correctly	(Maximum Pump Lift, 30 Inch)					
Timer Functions Set	(Microprocessor only)					
Supply Air Knockouts used	5" or 6" Knockouts (Qty 1 – 4)					
Fresh Air Knockouts used	3" Knockouts (Qty 1 – 3)					
Freeze Stat Tested	Auto Reset (Out 35°F in 55°F)					
Set Points	Mode		Fan Speed		Temp	°F

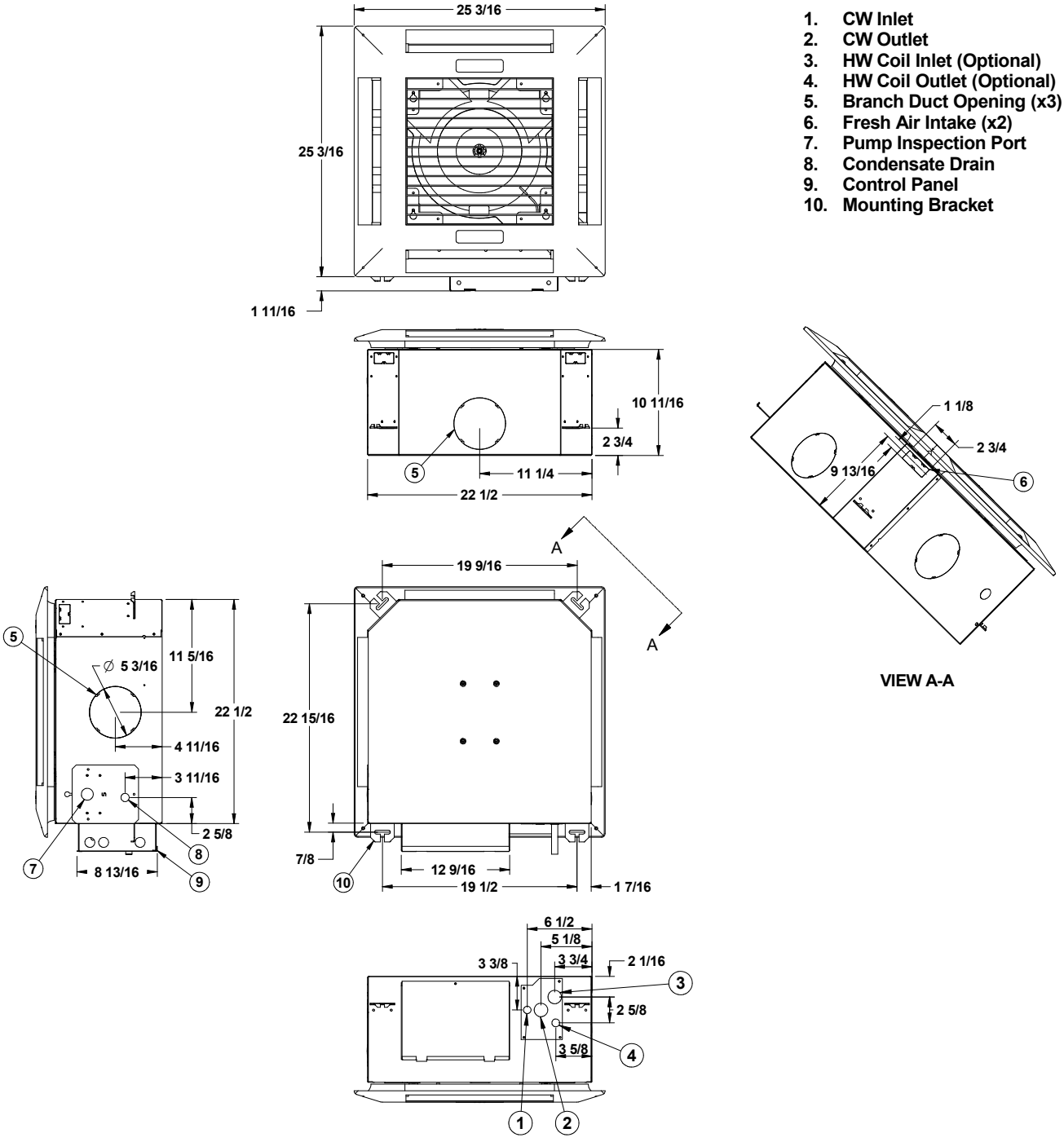
Outdoor Unit Check List

Brand		Model		Serial Number		
Supply Voltage		Primary		Secondary		
Suction Pressure						Psig
Liquid Pressure						Psig
Superheat @ Compressor						°F
Outdoor Air Temperature (Air on coil)						°F
Indoor Air Temperature						°F
Low Ambient Kit Fitted						
Hard Start Kit Fitted						
Crankcase Heater Fitted						

Technicians / Customer Notes

DIMENSIONS – SMALL CHASSIS

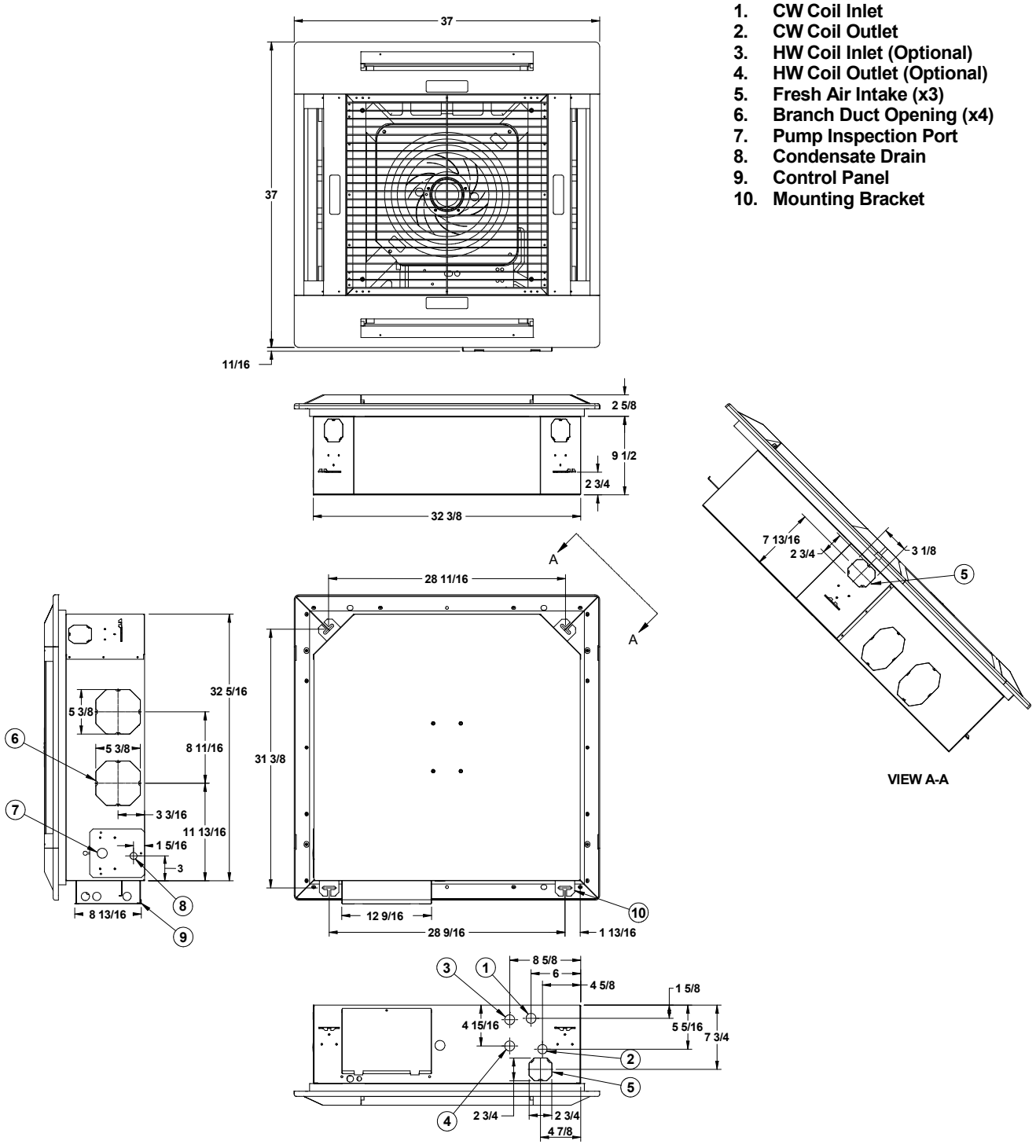
Figure 10.1
Dimensions – Small Chassis: SCW2/8 and SCW2/12



1. CW Inlet
2. CW Outlet
3. HW Coil Inlet (Optional)
4. HW Coil Outlet (Optional)
5. Branch Duct Opening (x3)
6. Fresh Air Intake (x2)
7. Pump Inspection Port
8. Condensate Drain
9. Control Panel
10. Mounting Bracket

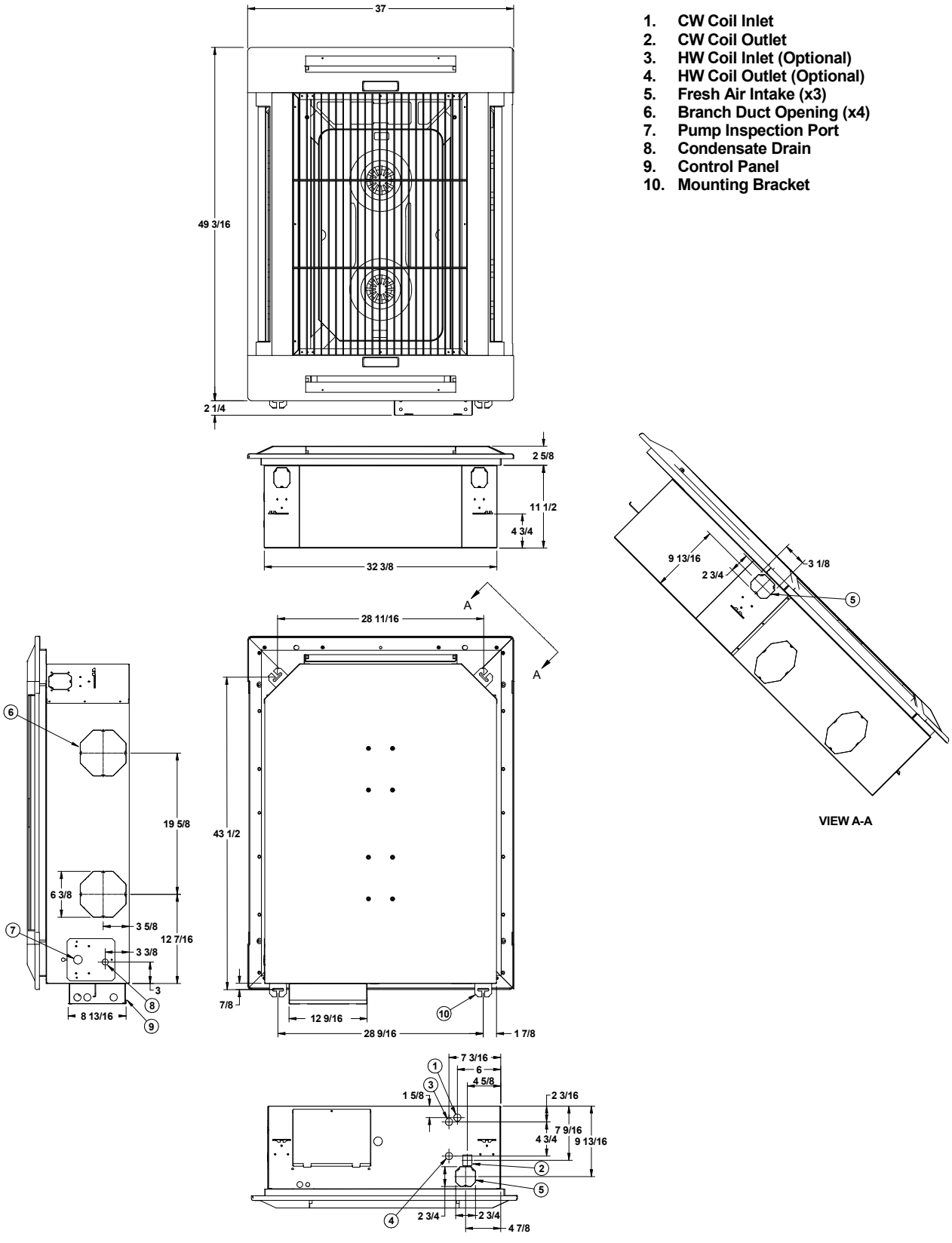
DIMENSIONS – MEDIUM CHASSIS

Figure 11.1
Dimensions – Medium Chassis: SCW 18 and SCW 20



DIMENSIONS – LARGE CHASSIS

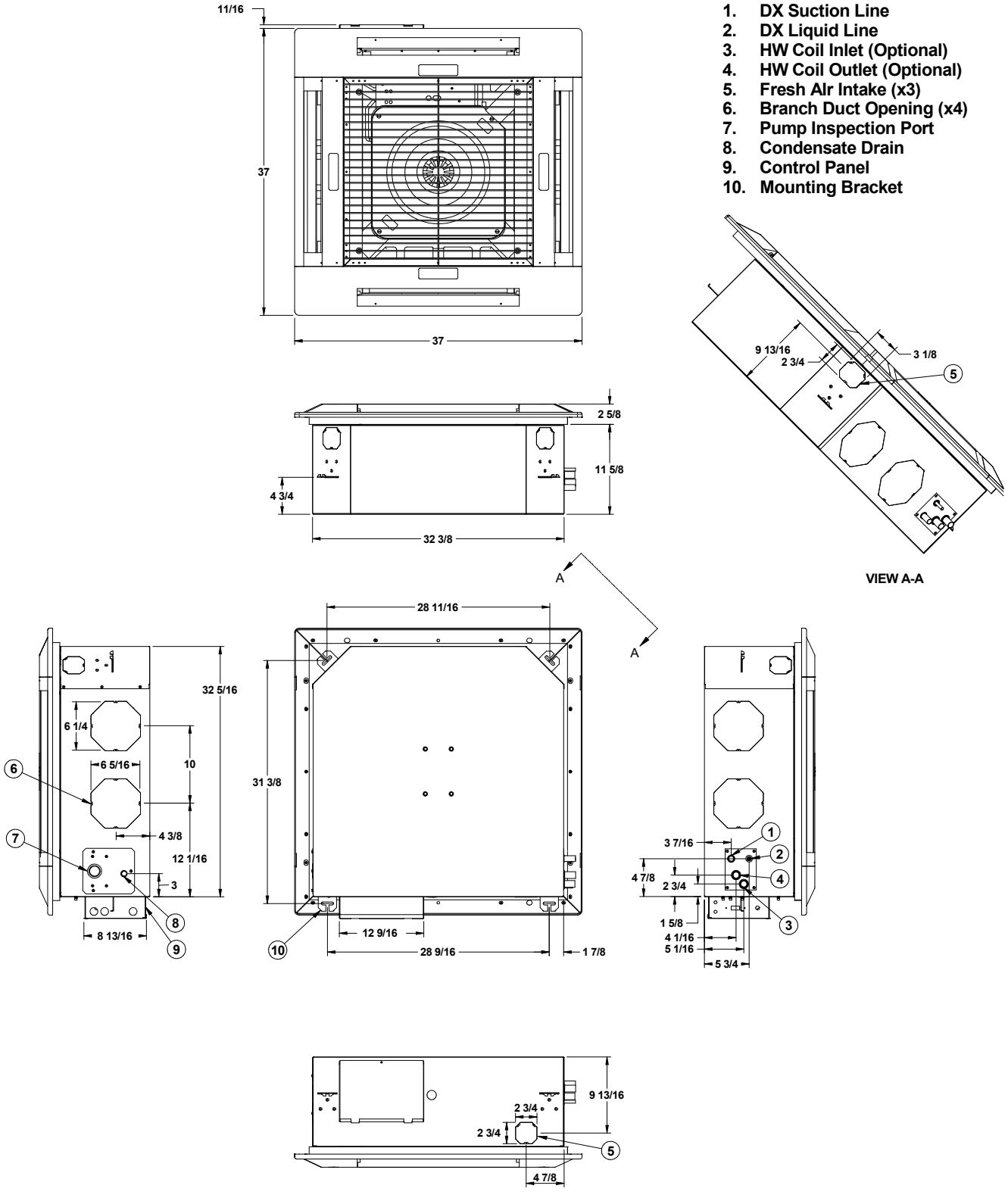
Figure 12.1
Dimensions – Large Chassis: SCW 33 and SCW 36



1. CW Coil Inlet
2. CW Coil Outlet
3. HW Coil Inlet (Optional)
4. HW Coil Outlet (Optional)
5. Fresh Air Intake (x3)
6. Branch Duct Opening (x4)
7. Pump Inspection Port
8. Condensate Drain
9. Control Panel
10. Mounting Bracket

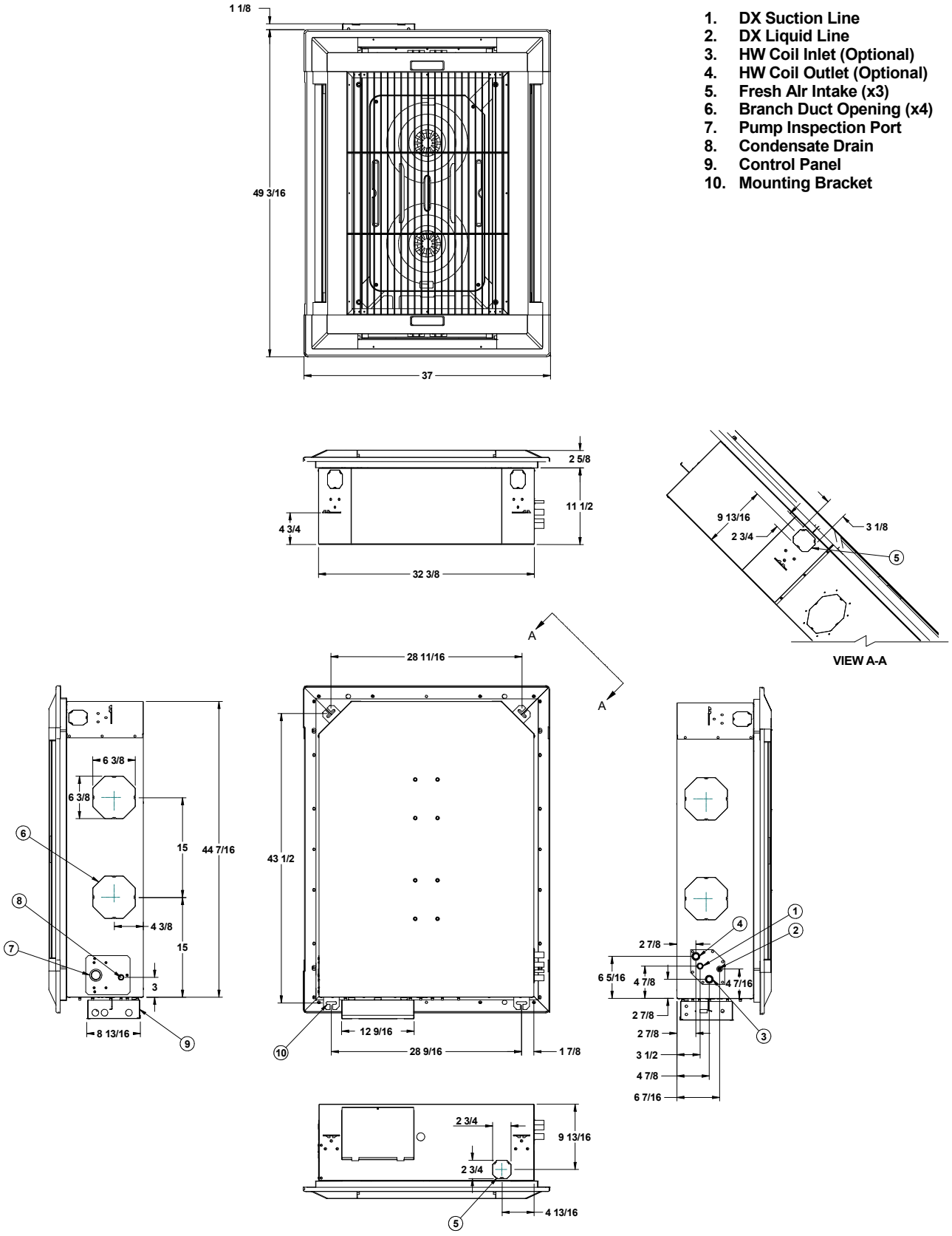
DIMENSIONS – MEDIUM CHASSIS

Figure 13.1
Dimensions – Medium Chassis: SSD/SSH 18 and SSD/SSH 24



DIMENSIONS – LARGE CHASSIS

Figure 14.1
Dimensions – Large Chassis: SSD/SSH 30, SSD/SSH 36 and SSD/SSH 42



TECHNICAL DATA – DX COOLING ONLY AND HEAT PUMP UNITS

Table 15.1
Technical Data – DX Cooling Only and Heat Pump Units

		Units	SSD/SSH 18	SSD/SSH 24	SSD/SSH 30	SSD/SSH 36	SSD/SSH 42
Nominal Cooling Capacity (1)		BTU/h	19200	23000	31400	38200	42500
Nominal Heating Capacity (2)		BTU/h	16400	21400	27400	32400	37200
Nominal System SEER (3)			13	13	13	13	13
HSPF			7.7	7.7	7.7	7.7	7.7
Construction							
Material: Fascia			High Impact Polystyrene				
Material: Chassis			Galvanized Steel				
Color: Fascia			Pearl Grey				
Fire rating			UL94 VO				
Evaporator							
Type			**Finned Tube**				
Quantity			1	1	1	1	1
Face Area		Ft²	4.0	4.0	5.2	5.2	5.2
Nominal Airflow	High	cfm	590	670	920	1000	1130
	Med	cfm	540	590	800	920	1000
	Low	cfm	465	540	680	800	920
Discharge			4-way	4-way	4-way	4-way	4-way
Fan							
Type			**Centrifugal**				
Quantity			1	1	2	2	2
Diameter		in	14	14	14	14	14
Horsepower (per fan)		HP	1/8	1/8	1/8	1/8	1/8
Refrigeration							
Number of Circuits			1	1	1	1	1
Refrigerant Type			R-410A	R-410A	R-410A	R-410A	R-410A
Weights							
Weight - Chassis		lb	66	66	97	97	97
Weight - Fascia		lb	18	18	21	21	21
Connections (4)							
Suction		in	3/4	3/4	3/4	3/4	3/4
Liquid		in	3/8	3/8	3/8	3/8	3/8
Condensate (ID)		in	3/8	3/8	3/8	3/8	3/8
Filtration							
Type			**Wire Framed Periframe**				
Quantity			2	2	3	3	3
Arrestance			80%	80%	80%	80%	80%
Condensate Pump							
Maximum Head		in	30	30	30	30	30
Nominal Flowrate		gpm	0.1	0.1	0.1	0.1	0.1
Options							
Electric Heating Capacity		kW	3.0	3.0	5.0	5.0	5.0
HW Heating Capacity (5)		BTU/h	38,746	41,993	56,609	59,600	64,268
HW Coil Connection (OD)		in	7/8	7/8	7/8	7/8	7/8
Max Branch Duct Connections		(qty)	2	2	2	2	2
Branch Duct Diameter		in	5	5	6	6	6
Branch Duct Air Volume (6)		cfm	115	130	180	200	220
Fresh Air Connections		(qty)	1-3	1-3	1-3	1-3	1-3
Fresh Air Duct Diameter		in	3	3	3	3	3
Fresh Air Volume (7)		cfm	60	65	85	90	95

(1) Nominal cooling capacity based on 80/67°F DB/WB and 95/75ºF DB/WB ambient
(2) Nominal heating capacity based on 70/60°F DB/WB and 47/43°F DB/WB ambient.
(3) Test conditions based on ARI 210/240.
(4) Refrigerant line sizes should always match condensing unit connection sizes.
(5) Nominal heating capacity based on 70/60°F DB/WB and water temperature of 180ºF inlet / 160ºF outlet.
(6) Maximum air volume available through one branch duct 6' long, with Cassette fan(s) at high speed and corresponding fascia aperture closed.
(7) Maximum fresh air through all knockouts connected to one 10' long duct with fan at high speed.

TECHNICAL DATA – CONDENSERS FOR DX COOLING ONLY UNITS

Table 16.1
Technical Data – Condensers for DX Cooling Only Units

		Cassette Unit				
		SSD 18	SSD 24	SSD 30	SSD 36	SSD 42
		Condenser Model				
	Units	YCJD18	YCJD24	YCJD30	YCJD36	YCJD42
Performance						
Nominal System Cooling Capacity	BTU/h	18,000	24,000	30,000	36,000	42,000
Nominal System SEER		13	13	13	13	13
Construction						
Material: Chassis		Pre-Treated Galvanized Painted Steel				
Color		Champagne				
Dimensions/Weights						
Height (includes Fan Guard)	in	28	28	28	28	30
Width	in	23½	23½	23½	29	29
Depth	in	23½	23½	23½	29	29
Weight	lb	97	129	131	145	173
Compressor						
Type		Rotary	Recip	Recip	Recip	Recip
Crankcase Heater Fitted		No	No	No	No	No
Condenser						
Coil Construction		Plate Fin Microchannel	Plate Fin Microchannel	Plate Fin Microchannel	Plate Fin Microchannel	Plate Fin Microchannel
Connections (1)						
Suction	in	5/8	3/4	3/4	3/4	7/8
Liquid	in	3/8	3/8	3/8	3/8	3/8
Refrigerant Charge						
Condenser-factory charge	lbs-oz	3 - 3	3 - 13	3 - 14	4 - 9	4 - 5
Charge Per Foot of Pipework	oz	0.58	0.62	0.62	0.62	0.67

(1) Refrigerant line sizes should always match condensing unit connection sizes.

TECHNICAL DATA – CONDENSERS FOR HEAT PUMP UNITS

Table 17.1
Technical Data – Condensers for Heat Pump Units

		Cassette Unit				
		SSH 18	SSH 24	SSH 30	SSH 36	SSH 42
		Condenser Model				
	Units	YHJD18	YHJD24	YHJD30	YHJD36	YHJD42
Performance						
Nominal System Cooling Capacity	BTU/h	18,000	24,000	30,000	36,000	42,000
Nominal System SEER		13	13	13	13	13
Construction						
Material: Chassis		Pre-Treated Galvanized Painted Steel				
Color		Champagne				
Dimensions/Weights						
Height (includes Fan Guard)	in	28	32	36	40	40
Width	in	34	34	34	34	34
Depth	in	34	34	34	34	34
Weight	lb	172	184	196	208	208
Compressor						
Type		Scroll	Recip	Recip	Recip	Scroll
Crankcase Heater Fitted		No	Yes	Yes	Yes	No
Condenser						
Coil Construction		Round Tube Plate Fin	Round Tube Plate Fin	Round Tube Plate Fin	Round Tube Plate Fin	Round Tube Plate Fin
Connections (1)						
Suction	in	3/4	3/4	3/4	3/4	7/8
Liquid	in	3/8	3/8	3/8	3/8	3/8
Refrigerant Charge						
Condenser-factory charge	lbs-oz	6 - 6	8 - 13	9 - 0	9 - 7	9 - 12
Charge Required-Per Foot of Pipework	oz	0.62	0.62	0.62	0.62	0.67

(1) Refrigerant line sizes should always match condensing unit connection sizes.

TECHNICAL DATA – CHILLED WATER UNITS

Table 18.1
Technical Data – Chilled Water Units

		Units	SCW2/8	SCW2/12	SCW 18	SCW 20	SCW 33	SCW 36
Nominal Cooling Capacity (1)		BTU/h	6,601	11,091	17,592	19,087	29,722	35,258
Construction								
Material: Fascia					High Impact Polystyrene			
Material: Chassis					Galvanized Steel			
Color: Fascia					Pearl Grey			
Fire rating					UL94 VO			
Chilled Water Coil								
Type					Finned Tube			
Quantity			1	1	1	1	1	1
Face Area		Ft²	1.8	1.8	2.8	2.8	5.2	5.2
Nominal Airflow	High	cfm	350	350	630	700	970	1160
	Med	cfm	300	300	530	630	890	970
	Low	cfm	260	260	500	530	785	890
Discharge			4-way	4-way	4-way	4-way	4-way	4-way
Unit water Volume		gal	0.29	0.29	0.45	0.45	0.79	0.79
Fan								
Type					Centrifugal			
Quantity			1	1	1	1	2	2
Diameter		in	12	12	15	15	14	14
Horsepower (per fan)		HP	1/8	1/8	1/8	1/8	1/8	1/8
Weights								
Weight - Chassis		lb	40	40	64	64	97	97
Weight - Fascia		lb	5	5	18	18	21	21
Connections								
Chilled Water Inlet		in	5/8	5/8	7/8	7/8	7/8	7/8
Chilled Water Outlet		in	5/8	5/8	7/8	7/8	7/8	7/8
Condensate (ID)		in	3/8	3/8	3/8	3/8	3/8	3/8
Filtration								
Type					Wire Framed Periframe			
Quantity			1	1	2	2	3	3
Arrestance			80%	80%	80%	80%	80%	80%
Condensate Pump								
Maximum Head		in	30	30	30	30	30	30
Nominal Flowrate		gpm	0.1	0.1	0.1	0.1	0.1	0.1
Options								
Electric Heating Capacity		kW	1.5	1.5	3.0	3.0	5.0	5.0
HW Heating Capacity (2)		BTU/h	13,799	N/A	29,258	30,946	46,455	51,600
HW Coil Connection (OD)		in	5/8	N/A	5/8	5/8	5/8	5/8
Max Branch Duct Connections		(qty)	2	2	2	2	2	2
Branch Duct Diameter		in	5	5	5	5	6	6
Ducted Air Volume (3)		cfm	80	80	100	125	200	220
Fresh Air Connections		(qty)	1-2	1-2	1-3	1-3	1-3	1-3
Fresh Air Duct Diameter		in	3	3	3	3	3	3
Fresh Air Volume (4)		cfm	40	40	60	65	90	95

(1) Nominal cooling capacity based on 80/67°F DB/WB and water temperature of 45ºF inlet / 55ºF outlet.

(2) Nominal heating capacity based on 70/60°F DB/WB and water temperature of 180ºF inlet / 160ºF outlet.

(3) Maximum air volume available through one branch duct 6' long, with Cassette fan(s) at high speed and corresponding fascia aperture closed.

(4) Maximum fresh air through all knockouts connected to one 10' long duct with fan at high speed.

ELECTRICAL DATA – CEILING CASSETTES

Table 19.1
Electrical Data – Ceiling Cassettes

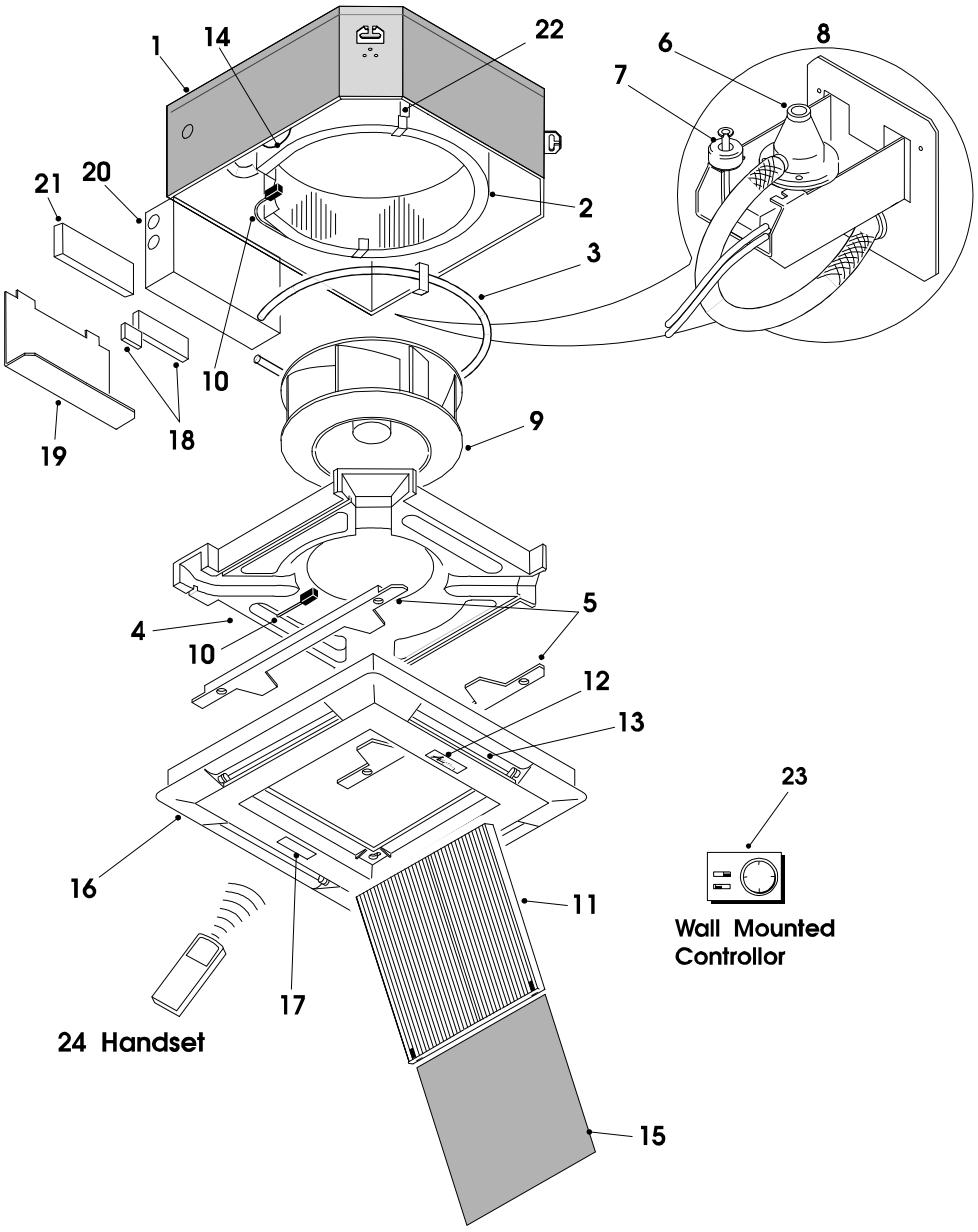
	Units	Model Size		
		2/8 & 2/12	**18, 20, & 24**	**30, 33, 36, & 42**
Chassis Size		**Small (2 x 2)**	**Medium (3 x 3)**	**Large (3 x 4)**
Standard Unit Data				
Power Supply		208-230V/1Ph/60Hz	208-230V/1Ph/60Hz	208-230V/1Ph/60Hz
Full Load Amps	A	0.65	0.85	1.3
Minimum Circuit Amps (MCA)	A	0.74	0.99	1.4
Recommended Fuse	A	10	10	10
With Optional Electric Heat (1)				
Power Supply		208-230V/1Ph/60Hz	208-230V/1Ph/60Hz	208-230V/1Ph/60Hz
Electric Heat Capacity	kW	1.5	3.0	5.0
Full Load Amps	A	7.2	13.9	23.1
Minimum Circuit Amps (MCA)	A	8.9	19.3	28.8
Recommended Fuse with Heat	A	15	20	30
With Optional Booster Xfmr (2)				
Power Supply		115V/1Ph/60Hz	115V/1Ph/60Hz	115V/1Ph/60Hz
Full Load Amps	A	1.3	1.7	2.5
Minimum Circuit Amps (MCA)	A	1.5	2.0	2.8
Recommended Fuse	A	10	10	10

(1) Standard Unit fitted with optional electric heating elements. Available with 230V model units only.

(2) Standard unit fitted with optional booster transformer for connection to a 115V electrical supply. Electric heat not available in conjunction with this option.

EXPLODED UNIT DRAWING & PARTS LIST – SCW2/8 & SCW2/12

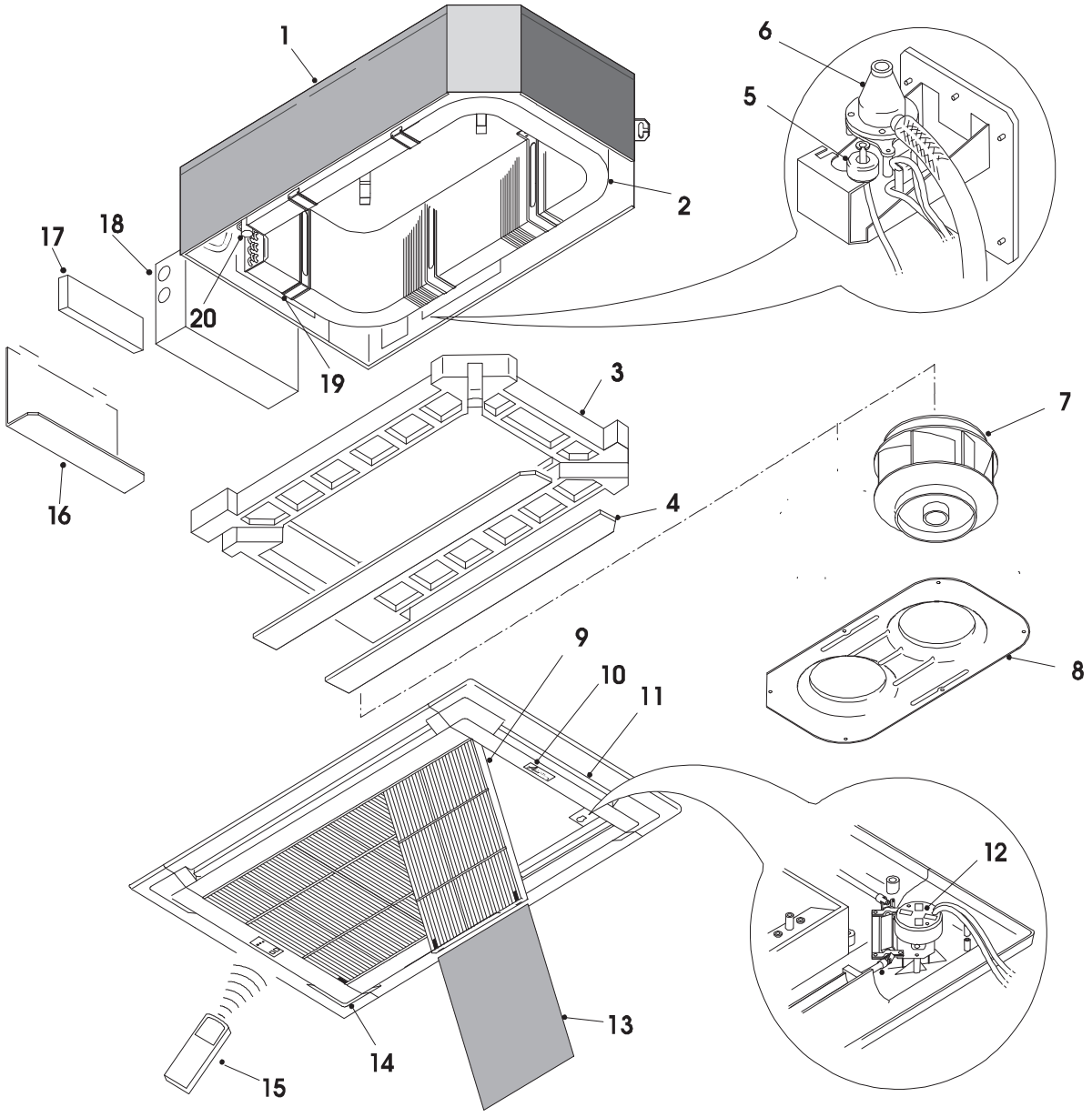
Figure 20.1
Exploded Unit Drawing & Parts List – SCW2/8 & SCW 2/12



1	Cassette Chassis	9	Fan/Motor Assembly	17	Receiver (Microprocessor Only)
2	Chilled Water Coil	10	Coil/Return Air Sensors (Microprocessor Only)	18	Terminal Rail, Relays & Timer (Micro & Electro- Mechanical Version)
3	Electric Heater Element Assembly	11	Grille	19	Control Box Lid
4	Condensate Tray	12	Airedale Label	20	Control Box
5	Condensate Tray Supports (2)	13	Air Deflector Vanes (4)	21	PCB Controller (Microprocessor Only)
6	Condensate Pump	14	Freeze Protection Thermostat (Electro-Mechanical version only)	22	Coil Support Brackets
7	High Level Switch	15	Filter	23	Wall Mounted Controller (Electro-Mechanical Only)
8	Condensate Pump Assembly (Shown Inverted)	16	Fascia Assembly	24	Remote Handset (Microprocessor Only)

EXPLODED UNIT DRAWING & PARTS LIST – SSD/SSH/SCW 18 - 42

Figure 21.1
Exploded Unit Drawing & Parts List – SSD/SSH/SCW 18 - 42



1. Cassette Chassis
2. Evaporator Coil
3. Condensate Tray
4. Condensate Tray Support
5. High Level Switch (Shown Inverted)
6. Condensate Pump (Shown Inverted)
7. Fan & Motor Assembly
8. Fan Inlet Ring
9. Grille
10. Infrared Receiver
11. Vane
12. Vane Motor Assembly
13. Filter
14. Fascia
15. Remote Handset
16. Control Box Lid
17. Control Box PCB
18. Control Box
19. Coil Bracket
20. Expansion Valve

MAINTENANCE – INDOOR UNIT/DISASSEMBLY PROCEDURE

MAINTENANCE – INDOOR UNIT

WARNING

When servicing or repairing of this equipment, use only factory-approved service replacement parts. Refer to the rating plate on the appliance for complete appliance model number, serial number and company address. Any substitution of parts or controls not approved by the factory will be at the owner's risk.

CAUTION

Do not attempt to reuse any mechanical or electrical controllers which have been wet. Replace defective controller.

IMPORTANT

To check most of the Possible Remedies in the troubleshooting guide listed in Tables 23.1 through 26.1, refer to the applicable sections of the manual.

Maintenance Schedule
Every THREE (3) MONTHS
1. Check the air filter condition. Clean if necessary (see Filter Removal and Cleaning, below).

Every SIX (6) MONTHS
1. Same as three (3) months, PLUS
2. Clean condensate tray with biocide suitable for polystyrene.
3. Clean fascia.

Every TWELVE (12) MONTHS
1. Same as six (6) months, PLUS
2. Check all electrical connections for security.
3. Check condensate pump operation.
4. Check the heating and cooling action, to ensure proper operation.

Filter Removal and Cleaning
1. Disconnect power.
2. Unclip the catches along the edge of each grille and allow them to hang from the fascia by the molded plastic hinges located along the opposite edge.
3. If desired, the grilles can be removed from the fascia completely.
4. The filter can now be easily slid out of the small plastic retaining clips on the back of each grille.
5. Gently vacuum clean the filters on a medium vacuum power.
6. When cleaned, the filters can be replaced by reversing steps 2 to 4.

Recommended Spares
One complete set of air filters.

DISASSEMBLY PROCEDURE

Disconnect power supply before disassembly to prevent electrical shock and injury from moving parts.

Fan Removal
1. Unclip the grille catches and remove the grille(s) from the fascia.
2. a. *For model sizes 2/8, & 2/12 only*, remove the fascia by loosening the four fascia mounting bolts and then slide the fascia horizontally until it releases from the chassis. Drain the condensate tray by removing the small black rubber drain plug, catching the condensate (if any) in a suitable container. Remove the self tapping screws securing the two insulated metal condensate tray support channels and pull the channels away from the condensate tray. Pull the condensate tray downwards away from the chassis.
2. b. *For model sizes 18 to 42 only*, remove the M6 screws from the black plastic inlet ring and pull the inlet ring downwards from the condensate tray.
3. Remove the electrical panel lid and disconnect the fan connections from within the electrical panel.
4. Rotate the fan by hand until two M6 nuts are visible through the fan mounting access holes. Remove the two nuts.
5. Rotate the fan 90° until the remaining two nuts are visible and remove while supporting the fan to prevent it from falling. The fan can now be dropped down from the unit.

Condensate Tray Removal
1. Unclip the grille catches and remove the grille(s) from the fascia.
2. Remove the fascia by loosening the fascia mounting bolts and then slide the fascia horizontally until it releases from the chassis. If the unit is microprocessor controlled, remove the display panel cable from within the electrical panel before removing the fascia.
3. Drain the condensate tray by removing the small black rubber drain plug, catching any condensate in a suitable container.
4. Remove the self tapping screws securing the two insulated metal condensate tray support channels and pull the channels away from the condensate tray. Pull the condensate tray, complete with inlet ring (inlet ring on model sizes 18 to 42 only) downwards away from the chassis.

Condensate Pump Removal
1. Disconnect the condensate pump and float switch wires from inside the electrical panel.
2. Unscrew the three M4 screws holding the pump inspection plate in place and pull the pump and mounting bracket away from the chassis while feeding the pump wires between condensate tray and insulation.

TROUBLESHOOTING – INDOOR UNIT

Table 23.1
Troubleshooting – Indoor Unit

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Red Alarm LED flashing at 1 second intervals *(Microprocessor units only)*	Faulty float switch.	*See section "Condensate High Level"*
	Fan Trip.	*See section "Fans Will Not Run"*
	Indoor coil sensor failure. *(Connected to micro terminals 'T3')*	After checking the above, use the unit wiring schematic to isolate the indoor coil sensor and measure the resistance. Sensor is 50K@72°F type. Check and replace if necessary.
Red Alarm LED flashing at 5 second intervals *(Microprocessor units only)*	Return Air Sensor failure. *(Connected to micro terminals 'T1')*	Use the unit wiring schematic to isolate the return air sensor and measure the resistance. Sensor is 50K@72°F type. Check and replace if necessary.
Both Yellow Heat & Cool LEDs flashing *(Microprocessor units only)*	Control Board (PCB) battery failure.	Check battery and replace if necessary. See the Infra-Red Remote Controller Installation and Service Manual, 8-507, for procedure.
Unit Will Not Operate	No power mains power.	Check power supply to the unit. For micro units, check power to the micro and check the on-board micro fuse.
	No 24V control circuit power.	Check the 24V feed from the control transformer. If not present, check transformer windings – replace if necessary.
	Control circuit disabled by unit protection device.	In some models, particularly electro-mechanical units, some protection devices (such as freeze-stats, fan trips, etc) are wired in line with the 24V control circuit feed to cause the unit to shut down in an alarm condition. Use the unit's wiring schematic to identify these devices and investigate accordingly.
	Infrared receiver failure. *(micro units only)*	If audible bleep is heard on signal transmission from transmitter and the green LED is lit or flashing, receiver is OK. If there are no LEDs lit and the unit will not respond to the transmitter, press the On/Off button on the fascia display panel. If the unit responds to the On/Off button receiver is OK. Check transmitter.
	Transmitter failure. *(micro units only)*	Try new batteries first, if receiver bleeps on transmitting signal, transmitter is OK. If no response press On/Off button on unit fascia. If the unit responds to the On/Off button transmitter is faulty.
	Microprocessor failure. *(micro units only)*	The microprocessor is the least likely component to be at fault. Investigate *all* other possibilities in every section of this troubleshooting guide first. Replace the micro only after all other avenues of investigation are exhausted.
Fans Will Not Run	Loose wire.	Check all fan wire connections. Use unit's electrical schematic to verify that fan is wired correctly.
	Faulty fan capacitor.	Check fan capacitors, replace if necessary.
	Faulty fan motor.	Check fan motor protector for open circuit, replace if necessary.
	Faulty PC Board.	On electro-mechanical units check for a signal at "G" terminal.
		On micro units check for steady green light on display panel.

TROUBLESHOOTING – INDOOR UNIT

Table 24.1
Troubleshooting – Indoor Unit

TROUBLE	POSSIBLE CAUSE	POSSIBLE CAUSE
No Cooling	Incorrect MODE setting. *(micro units only)*	Check that the transmitter MODE is set to Cooling or Auto Mode.
	Set point too high.	Check the set point on the transmitter or wall mounted thermostat and adjust if necessary.
	Compressor protection delay. *(micro units only)*	Check that the green On/Off LED is not flashing. If it is flashing, wait for ten minutes then re-check if cooling is operating. *(Applies to chilled water units also)*
	Compressor protection delay. *(Electro-mechanical DX units only)*	Wait for ten minutes and then re-check if cooling is operating.
	Dirty or blocked air filter.	*See section "Coil Freeze".*
	High condensate level trip.	Drain the condensate tray and investigate. *See section "Condensate High Level"*
	Indoor coil temperature too low.	Check refrigerant charge by measuring operating pressures. Check filters condition. *(See page 22 for filter removal and cleaning instructions)*
	Sensor failure. *(micro units only)*	If any of the sensors are faulty the microprocessor will disable the cooling operation *(see AIR 8-507, Infra-Red Controller, Installation and Service Manual).*
	Outdoor unit tripped.	Check outdoor unit - refer to outdoor unit troubleshooting section.
	Faulty valve actuator. *(Chilled water units only)*	Check cooling signal present at actuator. Check actuator by manually opening the valve. Replace actuator if necessary.
Water Leaking From Unit (see also *"Condensate High Level"*)	Condensate plug loose or missing.	Check that the rubber condensate plug is securely fitted to the underside of the unit's polystyrene drip tray. On some models this is located underneath the fascia support rails on the pump side of the unit.
	PCB jumper links not set correctly. *(micro units only)*	Check jumper links. Refer to unit wiring diagram.
	Unit installed unevenly.	With fascia removed, ensure that the unit chassis is level (at the face) both front to back and left to right, to ensure correct condensate flow.
	Condensate drain piping installed incorrectly.	Check that the site installed condensate gravity drain slopes 'downhill' away from the unit. *(See page 5 of this manual for installation guide)*
	Blocked/kinked condensate pipe.	Check condensate piping for blocks/kinks, clear as necessary. Check for a water tight connection between the condensate outlet and the site installed condensate gravity drain.
	Condensate pump blocked or failed.	Clear any blockages and ensure that power is being applied to the pump. If the pump still does not run, replace the pump.
	Float switch failure.	Check that the float switch operates correctly and is properly positioned. Float switch is normally closed, opens on rise of water level.

TROUBLESHOOTING – INDOOR UNIT

Table 25.1
Troubleshooting – Indoor Unit

TROUBLE	POSSIBLE CAUSE	POSSIBLE REMEDY
Condensate High Level *(micro units: red alarm LED will flash at one second intervals)*	Maximum pump lift exceeded.	Check that the condensate pump head is no greater than 30". *(See page 5 of this manual for installation guide)*
	Blocked/kinked condensate pipe.	*See section "Water Leaking From Unit".*
	Condensate pump blocked or failed.	*See section "Water Leaking From Unit".*
	Coil freeze up.	A coil freeze condition may have caused excessive condensate to collect in the drip tray. *See section "Coil Freeze".*
Coil Freeze	Cooling coil freeze protection thermostat tripped. *(Auto-reset when freeze cleared)*	Freeze stat is normally closed, opens during freeze. Where fitted, the stat will disable the cooling action (sometimes the entire system) during coil freeze conditions. Use the unit's wiring schematic to investigate.
	Dirty or blocked air filter.	Clean / replace filters as necessary. *(See page 22 for filter removal and cleaning instructions)*
	System head pressure set too low.	Check condensing pressure, installation of low ambient kit may be required.
	Loss of refrigerant.	Check system for refrigerant leaks and repair before re-charging.
No Heating (Hot Water)	Incorrect MODE setting. *(micro units only)*	Check that the transmitter MODE is set to Heat or Auto Mode.
	Set point too low.	Check the set point on the transmitter or wall mounted thermostat and adjust if necessary.
	Blocked or dirty filters causing low airflow.	Check filters condition. *(See page 22 for filter removal and cleaning instructions)*
	No hot water / pumps failed.	Check hot water source and supply to unit.
	Faulty valve / actuator.	Check actuator by manually opening and closing valve, replace if faulty.
	Faulty heater relay.	Check signals to relay and check action of relay contacts. Replace relay or PCB if necessary.
No Heating (Electric Heat)	Incorrect MODE setting. *(micro units only)*	Check that the transmitter MODE is set to Heat or Auto Mode.
	Set point too low.	Check the set point on the transmitter or wall mounted thermostat and adjust if necessary.
	Overheat cut out tripped. *(See also section "Electric Overheat")*	Investigate cause of over heat condition. • Possible low airflow, check filter condition. *(See page 22 for filter removal and cleaning instructions)* • Possible fan failure. Check fans. *(See section "Fans Will Not Run")* Remove power from unit and reset manual overheat cut-out by rubbing. DO NOT PRESS. *Consult Factory for instruction if necessary.*
	Heater element failed.	Investigate and replace if necessary.
	Faulty heater relay.	Check signals to relay and check action of relay contacts. Replace relay or PCB if necessary.

TROUBLESHOOTING/REPLACEMENT PARTS
MODEL NUMBER DESIGNATION/SERIAL PLATE

Table 26.1
Troubleshooting – Indoor Unit (Continued)

TROUBLE	
ELECTRIC OVERHEAT	The electric heat circuit contains one automatic reset and one manual reset overheat cut-out protection switch for each electric heat element fitted to the unit. The cut-outs are wired in line with the main power flowing in each element and operate as described below. 1. **Auto Cut-out** – if the auto cut-out trips, the electric heat is temporarily disabled until the unit temperature falls and causes the overheat cut-out to automatically reset. 2. **Manual Cut-out** – if the manual cut-out trips, the electric heat is disabled until the unit temperature falls and the overheat cut-out is manually reset. It will typically take five minutes for the unit temperature to fall sufficiently to allow the cut-out to be reset. The cut-out should only be reset by a qualified and competent electrician and with the mains power switched off. Ensure the elements have cooled sufficiently.

REPLACEMENT PARTS

For ease of identification when ordering replacement parts or contacting the factory about your unit, please quote the unit type and unit serial number. This information can be found on the serial plate attached to your unit. See Figure 26.2.

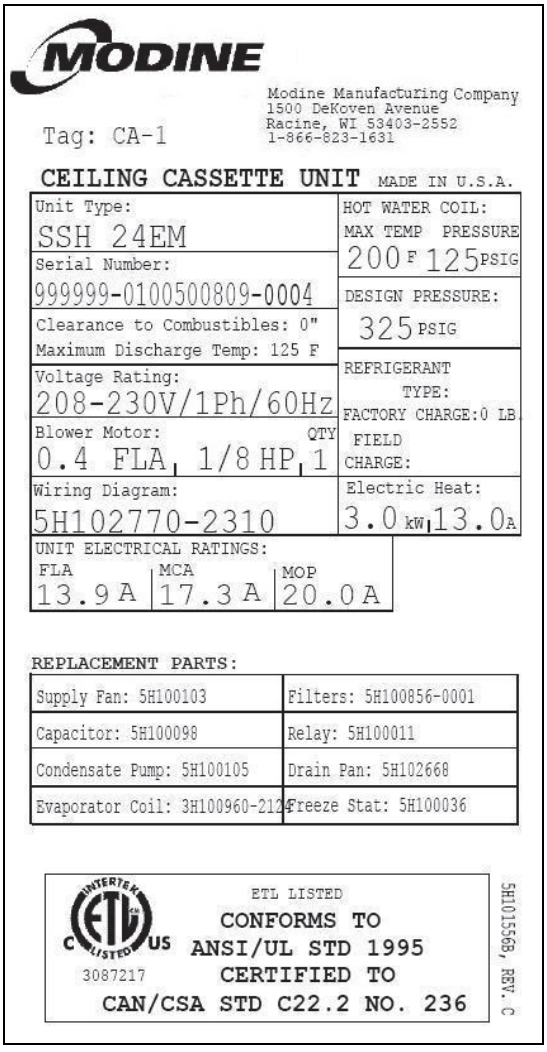
When a component part fails, a replacement part should be obtained through our Parts Department. If the part is considered to be under warranty, the following details are required to process this requirement:

1. Full description of part required, including Unit's part number, if known.
2. The original equipment serial number.
3. An appropriate purchase order number.

Figure 26.1
Model Number Designations

CEILING CASSETTE UNITS	
SSD, SSH or SCW	**Base Model:** SSD = Ceiling Cassette Unit – DX Cooling SSH = Ceiling Cassette Unit – Heat Pump SCW = Ceiling Cassette Unit – Chilled Water
2/ or _ (blank)	**Cabinet Size:** 2/ = Small Body (2 X 2 Series) _ = Medium Body (3 X 3 Series) or Large Body (3 X 4 Series)
8 to 42	**Model Size:** Nominal Cooling in Mbh (See Performance Data for Details)
EM, MC or CA	**Control Type:** EM = Electro-Mechanical Control MC = Microprocessor Controlled – Remote Control via Infrared or Pendant CA = Carel Controller
Example:	**SSD 18EM =** Ceiling Cassette Unit, DX Cooling, 18,000 Nominal BTU/Hr, Electro-Mechanical Control

Figure 26.2
Serial Plate EXAMPLE



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COMMERCIAL WARRANTY

Seller warrants its products to be free from defects in material and workmanship, EXCLUSIVE, HOWEVER, of failures attributable to the use of materials substituted under emergency conditions for materials normally employed. This warranty covers replacement of any parts furnished from the factory of Seller, but does not cover labor of any kind and materials not furnished by Seller, or any charges for any such labor or materials, whether such labor, materials or charges thereon are due to replacement of parts, adjustments, repairs, or any other work done. This warranty does not apply to any equipment which shall have been repaired or altered outside the factory of Seller in any way so as, in the judgment of Seller, to affect its stability, nor which has been subjected to misuse, negligence, or operating conditions in excess of those for which such equipment was designed. This warranty does not cover the effects of physical or chemical properties of water or steam or other liquids or gases used in the equipment.
BUYER AGREES THAT SELLER'S WARRANTY OF ITS PRODUCTS TO BE FREE FROM DEFECT IN MATERIAL AND WORKMANSHIP, AS LIMITED HEREIN, SHALL BE IN LIEU OF AND EXCLUSIVE OF ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, WHETHER ARISING FROM LAW, COURSE OF DEALING, USAGE OF TRADE, OR OTHERWISE, **THERE ARE NO OTHER WARRANTIES, INCLUDING WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE, WHICH EXTEND BEYOND THE PRODUCT DESCRIPTION CONFIRMED BY BUYER AND SELLER AS OF THE DATE OF FINAL AGREEMENT.**

This warranty is void if the input to the product exceeds the rated input as indicated on the product serial plate by more than 5% on gas-fired and oil-fired units, or if the product in the judgment of SELLER has been installed in a corrosive atmosphere, or subjected to corrosive fluids or gases, been subjected to misuse, negligence, accident, excessive thermal shock, excessive humidity, physical damage, impact, abrasion, unauthorized alterations, or operation contrary to SELLER'S printed instructions, or if the serial number has been altered, defaced or removed.

BUYER'S REMEDY FOR BREACH OF WARRANTY, EXCLUSIVE OF ALL OTHER REMEDIES PROVIDED BY LAW, IS LIMITED TO REPAIR OR REPLACEMENT AT THE FACTORY OF SELLER, ANY COMPONENT WHICH SHALL, WITHIN THE APPLICABLE WARRANTY PERIOD DEFINED HEREIN AND UPON PRIOR WRITTEN APPROVAL, BE RETURNED TO SELLER WITH TRANSPORTATION CHARGES PREPAID AND WHICH THE EXAMINATION OF SELLER SHALL DISCLOSE TO HAVE BEEN DEFECTIVE; EXCEPT THAT WHEN THE PRODUCT IS TO BE USED BY BUYER AS A COMPONENT PART OF EQUIPMENT MANUFACTURED BY BUYER, BUYER'S REMEDY FOR BREACH, AS LIMITED HEREIN, SHALL BE LIMITED TO ONE YEAR FROM DATE OF SHIPMENT FROM SELLER. FOR GAS-FIRED PRODUCTS INSTALLED IN HIGH HUMIDITY APPLICATIONS AND UTILIZING STAINLESS STEEL HEAT EXCHANGERS, BUYER'S REMEDY FOR BREACH, AS LIMITED HEREIN, SHALL BE LIMITED TO TEN YEARS FROM DATE OF SHIPMENT FROM SELLER.

These warranties are issued only to the original owner-user and cannot be transferred or assigned. No provision is made in these warranties for any labor allowance or field labor participation. Seller will not honor any expenses incurred in its behalf with regard to repairs to any of Seller's products. No credit shall be issued for any defective part returned without proper written authorization (including, but not limited to, model number, serial number, date of failure, etc.) and freight prepaid.

OPTIONAL SUPPLEMENTAL WARRANTY

Provided a supplemental warranty has been purchased, Seller extends the warranty herein for an additional four (4) years on certain compressors. Provided a supplemental warranty has been purchased, Seller extends the warranty herein for an additional four (4) years or nine (9) years on certain heat exchangers.

EXCLUSION OF CONSUMABLES & CONDITIONS BEYOND SELLER'S CONTROL

The above referenced warranty shall not be applicable to any of the following items: refrigerant gas, belts, filters, fuses and other items consumed or worn out by normal wear and tear or conditions beyond Seller's control, including (without limitation as to generality) polluted or contaminated or foreign matter contained in the air or water utilized for heat exchanger (condenser) cooling or if the failure of the part is caused by improper air or water supply, or improper or incorrect sizing of power supply.

Component Applicable Models	**"APPLICABLE WARRANTY PERIOD"**
Heat Exchangers Gas-Fired Units except PSH/BSH	TEN YEARS FROM DATE OF FIRST BENEFICIAL USE BY BUYER OR ANY OTHER USER, WITHIN TEN YEARS FROM DATE OF RESALE BY BUYER OR ANY OTHER USER, WITHIN TEN YEARS FROM DATE OF RESALE BY BUYER IN ANY UNCHANGED CONDITION, OR WITHIN ONE HUNDRED TWENTY-SIX MONTHS FROM DATE OF SHIPMENT FROM SELLER, WHICHEVER OCCURS FIRST
Heat Exchangers Low Intensity Infrared Units **Compressors** Condensing Units for Cassettes	FIVE YEARS FROM DATE OF FIRST BENEFICIAL USE BY BUYER OR ANY OTHER USER, WITHIN FIVE YEARS FROM DATE OF RESALE BY BUYER OR ANY OTHER USER, WITHIN FIVE YEARS FROM DATE OF RESALE BY BUYER IN ANY UNCHANGED CONDITION, OR WITHIN SIXTY-SIX MONTHS FROM DATE OF SHIPMENT FROM SELLER, WHICHEVER OCCURS FIRST
Burners Low Intensity Infrared Units **Other** Components excluding Heat Exchangers, Coils, Condensers, Burners, Sheet Metal	TWO YEARS FROM DATE OF FIRST BENEFICIAL USE BY BUYER OR ANY OTHER USER, WITHIN TWO YEARS FROM DATE OF RESALE BY BUYER IN ANY UNCHANGED CONDITION, OR WITHIN THIRTY MONTHS FROM DATE OF SHIPMENT FROM SELLER, WHICHEVER OCCURS FIRST
Heat Exchangers/Coils Indoor and Outdoor Duct Furnaces and System Units, PSH/BSH, Steam/Hot Water Units, Oil-Fired Units, Electric Units, Cassettes, Vertical Unit Ventilators **Compressors** Vertical Unit Ventilators **Burners** High Intensity Infrared Units **Sheet Metal Parts** All Products	ONE YEAR FROM DATE OF FIRST BENEFICIAL USE BY BUYER OR ANY OTHER USER, WITHIN ONE YEAR FROM DATE OF RESALE BY BUYER IN ANY UNCHANGED CONDITION, OR WITHIN EIGHTEEN MONTHS FROM DATE OF SHIPMENT FROM SELLER, WHICHEVER OCCURS FIRST

Modine Manufacturing Company has a continuous product improvement program, and therefore reserves the right to change design and specifications without notice.

MODINE
APPLIED THERMAL INNOVATION™

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